CLAIMS:

1. A high speed power supply arrangement suitable for laser diodes, comprising:

a) a variable voltage power supply,

b) a load path for carrying a laser diode,

c) a shunt path connected in parallel with said load path,

d) a current draining element for switching said shunt path, said current draining element being associated via a first feedback element with said variable voltage power supply such that current drained by said current draining element provides first feedback control of a voltage level of said variable voltage power supply, and

c) a voltage operated second feedback element associated with both said load path and said shunt path to provide second feedback control of said current draining element to drain current via said current draining element in response to current changes at said load.

2. The arrangement of claim 1, wherein said first feedback control is relatively slow and said second feedback control is relatively fast.

3. The arrangement of claim 1, wherein said first feedback control is set with a response rate suitable for a DC-DC voltage level converter.

4. The arrangement of claim 1, wherein said second feedback control is set with a response rate in the microsecond order of magnitude.

5. The arrangement of claim 1, wherein said current draining element is a transistor.

6. A method of current regulation to provide constant current to a load comprising:

providing a power source having a controllable output voltage level, providing current to said load from said voltage power source,

connecting a current draining element in parallel with said load, and arranging:

relatively fast feedback control from said load to operate said current draining element to drain over current from said load, and

relatively slow feedback control responsive to current drained by said current draining element to control said output voltage level of said power source.

7. A circuit arrangement for charging a capacitance comprising:

a load capacitance to be charged,

a serially connected inductive component contributing to a serial frequency dependent impedance, and

a variable frequency source for supplying charging current at a variable frequency,

said variable frequency source being controllable to reduce frequency during charging of said capacitor, thereby to reduce said frequency dependent impedance and maintain a level of charging current to said load capacitance.

8. The circuit arrangement of claim 7, further comprising a serially connected capacitive component to contribute to said serial frequency dependent impedance.

9. The circuit arrangement of claim 7, further comprising a current measurement device for measuring said charging current and using said measurement to provide a feedback signal to said variable frequency source, thereby to control said variable frequency to reduce said frequency.

10. The circuit arrangement of claim 9, wherein said variable frequency source comprises pulse width modulation.

11. The circuit arrangement of claim 7, wherein said load capacitance is connected to said serial component via a rectifying bridge.

12. The circuit arrangement of claim 9, wherein said feedback signal is modified to stabilize said charging current at a constant level whilst said load capacitance is charging.

13. A method of providing constant current charging of a capacitive load comprising:

arranging said capacitive load in series with a reactive impedance comprising at least an inductive element,

providing current at a controllable supply frequency,

measuring an actual charging current of said capacitive load,

using measured changes in said charging current to control said frequency thereby to adjust said reactive impedance so as to keep said charging current substantially constant.

14. The method of claim 13, wherein said reactive impedance further comprises a capacitive element in series with said inductive element.

15. The method of claim 13, comprising arranging said capacitive load with a rectifying bridge so that said capacitive load receives substantially DC charging current irrespective of said supply frequency.